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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/087,253 | 03/01/2002 | Mark M. Meyers | M.M. MEYERS 7-1 | 4240 |

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EXAMINER

THOMPSON, TIMOTHY J

ART UNIT PAPER NUMBER

2873

DATE MAILED: 01/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/087,253

Applicant(s)

MEYERS ET AL.

Examiner

Timothy J Thompson

Art Unit

2873

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09/15/2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 13-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 7-11 is/are rejected.
- 7) ☒ Claim(s) 6 and 12 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 March 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 4, 5, 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kinard et al.(U.S. Patent Pub. No. 2002/0076151) in view of Kanack(U.S. Patent No. 5,526,172) and Wu et al.(U.S. Patent No. 6,487,342).

Regarding claims 1, 7 and 8, Kinard discloses; a transmissive spacer; a lens coupled to a transmissive spacer and optically aligned with the membrane(fig 5b, 504) used in conjunction with the spacer and lens stating the device could be used as an optical switch(para 0002). Kinard does not disclose a membrane configured to be electrically deformable and reflective and positioned over a cavity to the substrate and located within a substrate, the transmissive spacer coupled to the substrate and located over the cavity, or terminals on an exterior of the optical device and connected to the membrane and configured to provide an electrical current to the membrane. Regarding the membrane, Kanack discloses a membrane configured to be electrically deformable and reflective and positioned over a cavity to the substrate and located within a substrate and states that this DMD can be used in an optical switch(col 1, lines 10-15) and with terminals on an exterior of the optical device and connected to the membrane and configured to

provide an electrical current to the membrane(terminals connected the membrane are inherently disclosed in fig 4 and the positioning of the terminals on the exterior of the device would have been obvious for easy connection of the wires from the power supply to the DMD). It would have been obvious to one skilled in the art at the time of the invention to use the membrane configured to be electrically deformable and reflective and positioned over a cavity to the substrate and located within a substrate and placing terminals on an exterior of the optical device and connected to the membrane and configured to provide an electrical current to the membrane as shown by Kanack, in the optical switch of Kinard et al., since as shown by Kanack a membrane configured to be electrically deformable and reflective and positioned over a cavity to the substrate and located within a substrate with terminals on an exterior of the optical device and connected to the membrane and configured to provide an electrical current to the membrane are commonly used in optical switches for redirecting the received light to a second channel. Regarding, the alignment of the transmissive spacer, Wu et al. discloses the transmissive spacer coupled to the substrate and located over the cavity. It would have been obvious to one skilled in the art at the time of the invention to align the transmissive spacer with the cavity and attach the spacer to the substrate as shown by Wu et al., in the optical switch of Kinard et al., since as shown by Wu et al., aligning the spacer with the cavity and attaching the spacer to the substrate is commonly done so as to allow for proper alignment of the switch.

Regarding claims 2, 10, Kinard discloses a fiber holder coupled to the lens(fig 5b, 304, since para 0025 discloses the fiber is coupled to the glass plate and the glass plate is coupled to the lens/spacer thus acting as a fiber holder).

Regarding claim 4, Kinard discloses the lens/spacer can be made from isotropic material which includes silicon(para 027, additionally it has been held that it is within the general skill in the art to select a know material, *In re Leshin*, 125 USPQ 416, therefor this limitation is not restrictive).

Regarding claim 5, Kinard discloses the transmissive spacer forms a lumen between the lens and the membrane wherein the lumen contains air or an inert atmosphere or wherein at least a partial vacuum exists between the lens and the membrane(fig 4a, and since there is no mention of an vacuum existing in the cavity of the lens/spacer, air inherently fills this void).

Regarding claims 9, Kinard discloses positioning a plurality of membranes over a plurality of cavities and coupling a lens to each transmissive spacer(fig 7a since more than lens is discloses then obviously a fiber and membrane is used in conjunction with each lens/spacer).

Claims 3 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kinard et al.(U.S. Patent Pub. No. 2002/0076151) in view of Kanack(U.S. Patent No. 5,526,172) and Wu et al.(U.S. Patent No. 6,487,342) as applied to claims 1 and 8 above, and further in view of Ochi et al.(U.S. Patent No. 5,850,276).

Regarding claims 3 and 9, a modified Kinard does not disclose alignment marks on the membrane substrate and the second substrate of the spacer/lens for aligning the two substrates. However, Ochi et al. discloses alignment marks on the two substrates for aligning a lens with a substrate having a device which produces light either through reflection or originating form the device(col 3, line s 35- 47). It would have been obvious to one skilled in the art at the time of the invention to use alignment marks on the substrates as shown by Ochi et al. in the optical device

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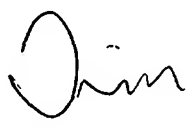
of a modified Kinard et al., since as shown by Ochi et al., alignment marks are commonly used for aligning optical devices.

Allowable Subject Matter

Claims 6 and 12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. With the allowable feature being the transmissive spacer has a thickness substantially equal to a focal length of the lens(claims 6 and 12).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy J. Thompson whose telephone number is (703) 305-0881. If the examiner can not be reached his supervisor, Georgia Epps, can be reached on (703) 308-4883.


T.J.T.
1/9/04

